TECHNICAL NOTES

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Boxelder Blight a Problem in the Northern Plains States

A blight of unknown cause is now widespread on boxelder (Acer negundo L.) in North Dakota. It also occurs in South Dakota, Montana, and Minnesota, and has been reported in the Prairie Provinces of Canada. The disease was first noticed in northwestern North Dakota 4 to 6 years ago.

The importance of boxelder as a tree species in the Plains States must be appreciated in evaluating the problem. It is one of the major species used in the shelterbelt program. The tree forms a dense windbreak when used in proper proportion with other species. It grows on a wide variety of soil conditions, sprouts well, and makes rapid recovery under favorable moisture conditions if it is winterkilled.

The typical symptoms of the blight are the small chlorotic leaves on the new shoots. All these leaves do not necessarily exhibit the symptoms. Leaf death has not been observed, although the photosynthetic area is reduced. No tree mortality attributed to the disease has been observed, but growth reduction appears to be considerable.

The disease is present in both field plantings and nurseries but is considered a more important problem in the nurseries. Due to growth reduction, 2 years are necessary for diseased seedlings to reach the size which normal seedlings reach in 1 year. The sale of nursery stock has recently declined because of the blight.

Close examination of 2-0 nursery stock in August 1956 showed that a small lepidopterous larva was boring in the axis of the terminal bud or that of a lateral leaf. The typical symptoms did not result from mechanical injury by this insect, as the boring activity was not very extensive (about 1/4 to 1/2 inch) at that time. All plants examined, including field plantings, contained this insect. Although it is associated with the condition, the insect may not be the cause.

Several possible causes of the disease are suggested: (1) Virus, (2) insect damage, (3) response of the plant to physiological factors, and (4) fungus or bacteria. A physiological condition, however, would probably not exist over such a wide area. It has also been suggested that the injury may be caused by herbicides used in small grain farming, but the disease has been observed on trees so far removed from possible herbicide injury that this possibility can be eliminated. The blight symptoms strongly indicate that a virus is involved. Certain viruses will produce typical symptoms only under optimum temperature and humidity conditions. This could account for some of the leaves on the new shoots being affected while others are not. Generally, the injury appears to be limited to growth produced during part of the growing season. If a virus is involved, it is very possible that transmission is by such insects as aphids, plant

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bugs, leafhoppers, or thrips. The movement of infected nursery stock could easily spread the disease over a wide area in a relatively few years.

Research should be started at once on this problem to determine the cause of the disease, its exact effect upon the plant, and the possibilities of control.

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